

15 September 2006

Mr. Robert Boggs
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2737

**Subject: Request for Concurrence on Suitability for Lease
Building 937, Presidio of San Francisco**

Dear Mr. Boggs:

The Presidio Trust (Trust) is submitting this formal request to the Department of Toxic Substances Control (DTSC) to provide concurrence on suitability for lease of Building 937, Presidio of San Francisco, California. As detailed in this letter, the Trust is intending to move forward with plans to lease Building 937. This letter provides a background on the environmental conditions at Building 937 and the surrounding area; describes the proposed reuse and potential tenants for Building 937; proposes mitigation measures that the Trust will implement to facilitate tenant leasing, building construction/rehabilitation, and tenant move-in to Building 937; provides measures to ensure the long-term health and safety of the public; and requests a formal concurrence from DTSC for the Trust to proceed with a lease to a tenant for recreation-compatible uses at Building 937.

Background

Building 937 is within the Building 923/937 Area of Crissy Field Operable Unit 4. Building 937 was originally constructed by the U.S. Army in 1921 as the main Presidio vehicle maintenance shop. Materials used or generated at the building include solvents, waste oils, fuels, paints, and thinners (Dames & Moore, 1997). The 17,600 square-foot, steel-frame structure is part of a series of seven buildings that form the “Hangar Complex” at the western end of Crissy Field along Mason Street in Area B of the Presidio.

Historically, the Army operated a 500-gallon waste oil underground storage tank (UST) and a 1,000-gallon xylenes UST (USTs 937.1 and 937.2) outside the northeast corner of Building 937. In 1981, during the installation of a hydraulic lift and associated UST (UST 937.H) situated in the southeastern portion of Building 937, petroleum hydrocarbons were reportedly observed in soil. During the installation of groundwater monitoring wells, the Army identified free product in wells near the USTs (located on the northern side of the building), with measured thickness ranging between 6 and 36 inches. In 1992, the Army performed an Interim Remedial Action (IRA). This IRA included removal of the two USTs 937.1 and 937.2 and approximately 500 cubic yards of soil. Part of this excavation was inside Building 937 but was limited to avoid structural damage to the building. Post-excavation verification soil

samples indicated the presence of total extractable hydrocarbons (TEH) up to 4,500 milligrams per kilogram (mg/kg) and other petroleum-related and volatile compounds. These samples remained in place after the backfilling of the excavation (Watkins-Johnson, 1993).

Between 1994 and 1998, a vacuum vaporization system operated to remove VOCs from the groundwater. A calculated mass of 4.8 to 17.6 kilograms of VOCs could have been removed by the UVB system from the subsurface during the first year of operation. The system operated continuously from August 1994 to September 1995, and intermittently between 1995 and 1998. The system ultimately was removed in 1998.

In 1998, the U.S. Army completed the *Final Remedial Action Plan, Crissy Field Area* (Army, 1998) (RAP) which included development of soil cleanup levels and proposed remedial actions within the Crissy Field area. Chemicals identified for cleanup in the RAP for soil at the Building 923/937 Area included volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals. The Army remediated soil in four areas of the Building 923/937 Area: (1) northwest corner of Building 937 (auto grease racks); (2) alley between Buildings 933/935 and Building 937; (3) a strip along the western side of (behind) Buildings 924 through 933; and (4) courtyard area of Buildings 933, 934, and 935. Following remediation, the Army collected verification soil samples for methylene chloride, PCBs, and metals (cadmium, copper, lead, mercury, and zinc) from all excavations, as well as VOCs, TPH compounds, semi-volatile organic compounds (SVOCs), chromium, and nickel from the excavation northwest of Building 937. The verification sampling indicated that chemical concentrations in samples were less than the Crissy Field RAP cleanup levels, except for zinc at one location (923EX087[0.5]4) underneath Building 924 (IT, 1998). Tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected at maximum concentrations of 0.037 mg/kg and 0.01 mg/kg, respectively, in the sidewall confirmation samples from the excavation at the northwest corner of Building 937.

During implementation of the RAP in 1998, the Army also excavated approximately 2,605 tons of soil from the northeastern corner outside of Building 937. Chemicals detected in the verification soil samples in the excavation wall at the 7.5-foot depth adjacent to Building 937 included TPH as gasoline, diesel, and fuel oil (TPHg, TPHd, TPHfo), benzene, and toluene. Chemical concentrations were less than the applicable cleanup levels in the Crissy Field RAP in all verification samples, except for three samples collected adjacent to Building 937, which could not be removed due to the potential for structural damage to the building. Maximum residual concentrations in these sidewall samples included 7,600 mg/kg TPHg, 7,300 mg/kg TPHd, 21,000 mg/kg TPHfo, 73 mg/kg xylenes, 21 mg/kg toluene, and 13 mg/kg ethylbenzene.

In December 2001, the Trust removed the hydraulic lifts from Building 937. In soil samples collected beneath the hydraulic fluid, TPHd was detected at concentrations of 2.9 and 11 mg/kg (Treadwell & Rollo, 2003).

In May 2002, the Trust installed three soil borings to look for the presence of free-phase hydrocarbons in the smear zone and saturated zone outside the northeastern corner of Building 937. Maximum concentrations detected include 8,200 mg/kg TPHg, 5,400 mg/kg TPHd, 18,000 mg/kg TPHfo, 5.1 mg/kg ethylbenzene, and 37 mg/kg xylenes. No free-phase hydrocarbons were observed and no VOCs were detected (Treadwell & Rollo, 2003).

In July 2004, the Trust completed the *Crissy Field Operable Unit 4 Implementation Report* (EKI, 2004) to document the completion of remediation requirements at sites included in the Crissy Field RAP. In the Implementation Report, the Trust requested the DTSC and Regional Water Quality Control Board, San Francisco Bay Region (Water Board) to provide closure certification for all sites within the Crissy Field Area under the respective agency's jurisdiction, except for ongoing groundwater monitoring at the Building 923/937 and Building 979 Areas. In the Implementation Report, residual chemical concentrations following Army remediation were compared with the current cleanup levels for residential (unrestricted) site use developed by the Trust (EKI, 2002). For the Building 923/937 Area, the concentrations of a few VOCs, benzo(a)pyrene, TPH and related compounds, arsenic, cadmium, and lead in residual soil were greater than residential cleanup levels. As a result, the Trust proposed land use restrictions prohibiting residential land use and use of groundwater for potable supply at the Building 923/937 Area.

In August 2005, the DTSC requested a vapor intrusion assessment be performed at Building 937. In December 2005, the Trust conducted subslab soil vapor sampling followed by indoor air sampling in January 2006 in Building 937. The subslab sampling event indicated the presence of PCE and other VOCs in subslab vapor of Building 937 at concentrations above risk-based target concentrations (RBTCs), which are conservative screening levels for protection of human health (EKI, 2006b). The results of the indoor air sampling indicated the presence of PCE in indoor air samples at concentrations slightly above the RBTCs. Based on these results, the Trust completed a comprehensive soil gas, groundwater, and soil investigation in June 2006 (EKI, 2006b). The purpose of the June 2006 investigation was to characterize the presence of PCE and other chlorinated solvents in the Building 937 Area and identify the source of this contamination. Because sources of PCE could have been located south of Building 937 (e.g., near or under Building 933), samples were also collected in the vicinity of Building 933. In addition, a second round of subslab vapor sampling at Building 937 was conducted in July 2006 to assess seasonal effects.

Attachment 1 provides the sample locations and draft data results for PCE from the vapor intrusion assessment and follow-on sampling conducted between December 2005 and July 2006. Attachment 2 provides the data tables with the draft sample results. It is noted that the data report from the vapor intrusion assessment and follow-on sampling has not yet been submitted to DTSC. The figures and data tables in Attachments 1 and 2 are, therefore, considered draft at this time. Final tables and figures will be submitted in the forthcoming data report. The following summarizes the draft results of the vapor intrusion assessment and follow-on sampling for Building 937:

- Subslab soil vapor: The subslab sampling events indicated the presence of PCE and other VOCs in subslab vapor of Building 937 at concentrations above RBTCs. Two RBTCs for vapor intrusion to indoor air were developed for PCE in subslab soil vapor: 10 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) based on a conservative attenuation factor of 0.1 and 100 $\mu\text{g}/\text{m}^3$ based on an attenuation factor of 0.01 (EKI, 2006b). PCE concentrations in subslab vapor exceeded the RBTCs in several locations underneath Building 937, with a maximum concentration of 39,900 $\mu\text{g}/\text{m}^3$. The highest concentrations of PCE were detected near the central floor drain and at the northern end of the building. TCE, benzene, chloroform, and 1,2,4-trimethylbenzene were also detected above the RBTCs in a few subslab vapor samples.
- Indoor air: Results of the indoor air sampling indicated the presence of PCE in indoor air samples at concentrations only slightly above indoor air RBTCs. PCE was also detected in outdoor air at roughly the same concentrations as indoor air. Benzene was also detected above RBTCs in both indoor and outdoor air locations at similar concentrations.

- Soil gas: Concentrations of PCE and other VOCs in soil gas were generally equal to or below soil gas RBTCs (the highest concentrations were detected in the northern end of the building where high subslab concentrations were also detected).
- Groundwater: Concentrations of PCE in groundwater were below maximum contaminant levels (MCLs) at all locations, except for detections of 5.9 and 6.3 micrograms per liter ($\mu\text{g}/\text{L}$) in a sample and duplicate sample collected near the northern end of the building (where high subslab and soil gas concentrations were also detected).
- Soil: Soil samples collected at Building 937 were non-detect for PCE, except for one detection at 0.02 mg/kg near the northern end of the building (where high subslab, soil gas, and groundwater concentrations were also detected). This value is below the Water Board's Environmental Screening Levels (ESLs) for human health.

The results of the vapor intrusion assessment and follow-on sampling indicate that PCE and other VOCs are present in subslab vapor at levels which may pose a risk to workers and future occupants of Building 937 via an indoor air inhalation exposure pathway. Under current building conditions, the indoor air results did not show significant volatilization of PCE and other VOCs into indoor air of the building. However, under future building conditions following construction and retrofit, conditions related to indoor air ventilation will change and the subslab vapors may have the potential to volatilize into the building at greater concentrations which could pose a risk to human health. The soil gas, groundwater, and soil sampling did not show significant impacts of PCE and other VOCs in these media, indicating that there is not likely a continuing source of PCE in the subsurface at Building 937.

Intended Reuse and Potential Tenants for Building 937

Under the Presidio Trust Management Plan (PTMP), intended reuse of the historic line of buildings along Mason Street is for uses compatible with open space and recreational opportunities provided in Area A. The PTMP indicates that historic buildings, such as Building 937, shall be retained and reused to offer recreational activities, serve visitor needs, and reactivate the Mason Street edge along the historic airfield (Trust, 2002).

The Trust anticipates that future use of Building 937 will be associated with recreation-compatible activities, which include sports-related businesses, general visitor amenities, and retail specialties. At this time, a tenant/developer/operator is proposing to rehabilitate, reuse, and operate the historic Building 937 as a winery. The winery would include a retail wine tasting room and a restaurant consisting of approximately 6,400 square feet. Activities conducted at the winery would include the aging, blending, and bottling of wine; the wholesale and retail sale of wine; the retail sale of wine-related merchandise; and designated special events related to wine education, tasting, and dining which may include catering events, classes, fund raisers, corporate events, private parties, weddings, festivals, trade shows, wine club meetings, and live performance. A conceptual design plan showing the design and layout of the current proposed use of Building 937 as a winery is provided in Attachment 3.

The Trust's anticipated schedule for tenant leasing and construction at Building 937 to the winery tenant is as follows:

- Lease signed – 1 November 2006
- Tenant finalizes design (7 months) – 1 June 2007
- Permitting (1 month) – 1 July 2007
- Construction (8 months) – starts 3 July 2007
- Construction finish – 1 March 2008.

Proposed Mitigation Measures to Facilitate Tenant Leasing, Building Construction/Rehabilitation, and Tenant Move-in to Building 937

Based on the environmental data and plans for the rehabilitation and potential future use of the building, the Trust is proposing to proceed with tenant leasing (to a tenant for recreation-compatible uses), building construction/rehabilitation, and tenant move-in plans at Building 937, with mitigation measures to protect public health and safety.

The presence of PCE and other VOCs in subslab vapor of Building 937 represents a potential risk to workers and future building occupants which should be mitigated. The Trust will adopt the following mitigation measures to ensure public health and safety during the tenant construction, move-in, and business operation process at Building 937:

1. **Active Soil Depressurization (ASD) System:** To limit the potential for PCE and other VOCs to migrate from the subsurface into the building, an ASD system will be installed and operated. According to the U.S. Environmental Protection Agency (USEPA), ASD systems are the most effective and frequently used method for reducing radon (a radioactive gas) entry into existing buildings (USEPA, 1993). ASD systems are prescriptive systems for reducing the entry of soil gas, whether it is radon or VOCs. The ASD system creates a low pressure zone beneath the building slab using a powered fan to create a negative pressure between the slab and foundation (USEPA, 1993). This low-pressure field prevents soil gas from entering the building because the pressure is lower beneath the slab than inside the building. Soil gas is preferentially collected in a suction pit prior to entry into the structure, and exhausted to appropriate locations outside the building that will limit the potential for the VOCs or soil gas to enter the building (through the ventilation system or open windows). The ASD method has been a proven technology for reducing the entry of radon into buildings and has been used to effectively reduce the potential for migration of other volatile compounds, such as VOCs, into buildings.
2. **Post-construction Indoor Air Monitoring:** Following building construction/rehabilitation and prior to tenant occupancy, the indoor air of the building will be retested to ensure that PCE and other VOCs are not present in indoor air at levels which could pose a risk. The Trust expects to conduct two rounds of sampling: one round of sampling immediately following construction and prior to tenant occupancy and a second round approximately 6 months later (after the tenant has moved in and the business is open for operation).
3. **Construction Health & Safety (H&S) Plan:** The Trust will require the tenant's construction contractor to prepare and implement a H&S Plan to ensure worker safety during construction. H&S protocols will be established for potential risks related to VOCs and other contaminants in soil at Building 937. The H&S Plan will include monitoring of VOCs within the worker's breathing zone.

4. **Building 923/937 Land Use Control (LUC):** In the addenda section of the Trust's recent deliverable to the DTSC entitled *Presidio Trust Land Use Controls Master Reference Report* (EKI, 2006a), the Trust provided the LUC for the Building 923/937 Area, which includes Building 937. The LUC is designed to provide long-term protection of human health and the environment for residual contamination remaining in soil and groundwater in the area. The LUC for Building 937 will (1) restrict sensitive uses of the site (such as housing, schools, playgrounds, hospitals, and day care facilities); (2) provide that the un-remediated areas around the building must remain covered with either buildings, pavement, or another barrier; (3) include soil handling, testing, reuse, and disposal requirements; (4) provide that all soil intrusive work in un-remediated areas be conducted under a site-specific H&S Plan; and (5) restrict use of groundwater at Building 937 as a drinking water or irrigation water supply.

The design process for the ASD system will be conducted concurrently with the tenant's design process. It is the Trust's intent to install the ASD system during building construction and rehabilitation. Details regarding the ASD design, operation, schedule, monitoring, and shutdown criteria, will be provided in a work plan which will be submitted to DTSC for review. Monitoring of subslab vapor concentrations and/or emissions from the ASD system will likely be conducted to monitor the effectiveness of the ASD system and evaluate operation and shutdown criteria. The Trust will coordinate with the Air Resources Board regarding all potential regulations and potential emission controls applicable to the ASD system.

If the existing drain pipe at Building 937 is removed during the construction and retrofit, all procedures regarding soil management (i.e., handling, testing, reuse, and disposal requirements) established in the LUC will be followed. Procedures will be in place to remove accessible grossly contaminated soil during the pipe removal and/or pipe replacement process.

Throughout this process, the Trust expects that the tenant will proceed with move-in plans and open for business as scheduled. The proposed mitigation measures, including the ASD system, construction H&S Plan, post-construction indoor air monitoring, and LUC, will ensure that the building is safe for workers and future building occupants. If at any time concentrations of VOCs are found to pose an immediate risk to workers or building occupants, the Trust will have the right to stop work at the site and/or terminate the tenant's lease. The Trust will include a termination clause in the tenant's lease for environmental issues that pose an immediate risk to health and safety. The Trust will coordinate with DTSC during this process.

Request for DTSC Concurrence

By this letter, the Trust is requesting DTSC to provide written concurrence on the suitability for lease at Building 937, under the following conditions:

- The Trust will proceed with a lease to a tenant for recreation-compatible uses (such as the winery);
- The tenant will proceed with building construction and rehabilitation, move-in, and normal business operations; and
- Concurrent with the tenant's planning work, the Trust will proceed with a work plan and design for the ASD system. The Trust will install and operate the ASD system, as well as implement the other mitigation measures outlined above, to ensure public health and safety.

It is noted that the Trust is only requesting DTSC to concur with a lease for future use of the building for recreation-compatible uses, which include sports-related businesses, general visitor amenities, and retail

specialties. If the Trust selects a different use for Building 937 that is not associated with recreation-compatible uses, the Trust will submit a revised request for concurrence on the suitability for lease and modify the proposed mitigation measures, as needed.

It is also noted that the Trust is undergoing a separate CERCLA process for Building 937 concurrent to the building leasing plans. Under the CERCLA process, an appropriate remedial action to address the subslab vapors at Building 937 will be selected and implemented, eventually resulting in closure certification from DTSC for the site. The CERCLA process will be conducted concurrent to the building leasing plans and, as such, the tenant will be provided full disclosure of CERCLA environmental issues and data for Building 937 and the 923/937 Area. All construction activities for the building and ASD system will be conducted to facilitate the final CERCLA remedy for Building 937 and ensure that the final remedy is not interfered with or impeded.

Please call me at (415) 561-4259 if you have any questions or would like further information on this subject.

Sincerely yours,
The Presidio Trust

Original Signed by:

Craig Cooper
Environmental Remediation Manager

Attachments:

- 1 Draft Sample Locations and PCE concentrations in Subslab Vapor, Soil Gas, Soil, and Groundwater at Buildings 937 and 933
- 2 Draft Results from the Vapor Intrusion Assessment and Follow-on Sampling at Buildings 937 and 933
- 3 Conceptual Design Plan for Building 937

Cc: Devender Narala, RWQCB
Brian Ullensvang, NPS
Doug Kern, RAB
Mark Youngkin, RAB

References:

Dames & Moore, 1997. *Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco.*

EKI, 2002. *Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water, Presidio of San Francisco, California.* October.

EKI, 2004. *Crissy Field Operable Unit 4 Implementation Report, Presidio of San Francisco, California.* July.

EKI, 2006a. *Presidio Trust Land Use Controls Master Reference Report, Presidio of San Francisco, California.* August.

EKI, 2006b. *Buildings 933 and 937 Vapor Intrusion Assessment and Field Sampling Report, Presidio of San Francisco, California.* Pending.

IT Corporation (IT), 1998. *Soil Remediation Closure Report, Crissy Field Area, Presidio of San Francisco, California.* June.

Presidio Trust (Trust), 2002. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco.* May.

Treadwell & Rollo, 2003. *Draft Building 900s Area Construction Completion Report.* March.

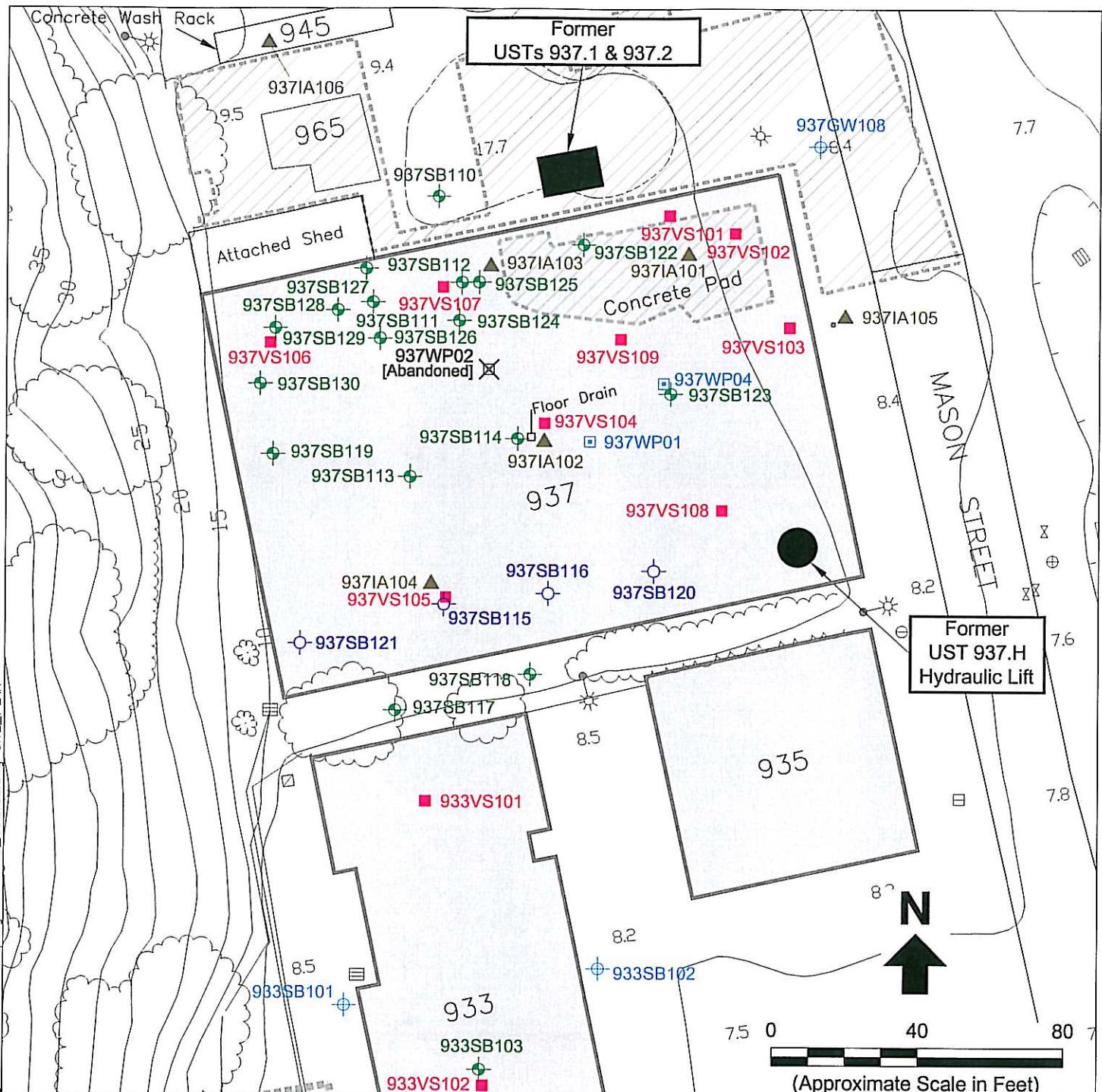
U.S. Army (Army), 1998. *Final Remedial Action Plan, Crissy Field Area, Presidio of San Francisco, California.*

U.S. Environmental Protection Agency (USEPA), 1993. *Final Radon Prevention in the Design and Construction of Schools and Other Large Buildings, EPA/625/R-92/016* January 1993.

Watkins-Johnson, 1993. *Soil and Groundwater Pollution Characterization Report for Building 937, Presidio of San Francisco.* September.

Attachment 1

Draft Sample Locations and PCE Concentrations in Subslab Vapor, Soil Gas, and Groundwater at Buildings 937 and 933

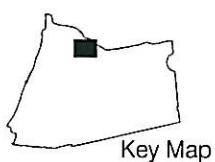


Legend:

- Former UST Location
- Former Army Excavation Areas
- 937** Existing Building
- ▲ Air Sample Location
- Well Point
- ⊕ Grab Groundwater Sample Location
- Subslab Vapor Sample Location
- Soil Gas Sample Location
- ◆ Soil Gas and Grab Groundwater Sample Location

Abbreviations:

UST = underground storage tank



Erler & Kalinowski, Inc.

Buildings 933/937 Sampling Locations

Presidio Trust
San Francisco, CA
September 2006
EKI A000003.08

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Notes:
1. All locations are approximate.
2. Basemap provided by the Pres.
3. Sample survey locations from
11 July 2006.

AREA 2			
Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA103	NA	0.69/1.06 $\mu\text{g}/\text{m}^3$
Subslab Soil Vapor	937VS107	0.5	5,790/5,970 $\mu\text{g}/\text{m}^3$ (4) 5,750/7,470 $\mu\text{g}/\text{m}^3$ (5)
Soil Gas	937SB110	5	230 $\mu\text{g}/\text{m}^3$
	937SB111	4	1,400/1,300 $\mu\text{g}/\text{m}^3$
	937SB112	3.5	1,100/2,850 $\mu\text{g}/\text{m}^3$ (12)
Soil	937SB110	2.5	<0.0068 mg/kg
	937SB111	2.5	<0.0059 mg/kg
	937SB112	2.5	0.02/0.043 mg/kg
	937SB124	4	<0.0058 mg/kg
	937SB125	2.5	<0.0053 mg/kg
	937SB126	3.5	<0.0056 mg/kg
	937SB127	2.5	<0.0065 mg/kg
	937SB128	3.5	<0.0054 mg/kg
Groundwater	937SB110	5 - 6	<0.5 $\mu\text{g}/\text{L}$
	937SB111	6.4 - 8	1.6 $\mu\text{g}/\text{L}$
	937SB112	4.3 - 6	6.3/5.9 $\mu\text{g}/\text{L}$

AREA 1			
Sample Type	Sample ID	Depth	PCE
Ambient Air	937IA106	NA	<0.68 $\mu\text{g}/\text{m}^3$

AREA 6			
Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA101	NA	<0.68 $\mu\text{g}/\text{m}^3$
	937VS101	NA	17.2 $\mu\text{g}/\text{m}^3$ (4) 113 $\mu\text{g}/\text{m}^3$ (5)
Subslab Soil Vapor	937VS102	NA	<6.78 $\mu\text{g}/\text{m}^3$ (4)
	937VS103	NA	<5.1 $\mu\text{g}/\text{m}^3$ (5)
	937VS109	NA	43.8 $\mu\text{g}/\text{m}^3$ (4)
	937VS109	NA	62.6 $\mu\text{g}/\text{m}^3$ (5)
Soil Gas	937SB122	4	154 $\mu\text{g}/\text{m}^3$ (4)
	937SB122	4	216 $\mu\text{g}/\text{m}^3$ (5)
Groundwater	937GW108	5 - 15	<0.5 $\mu\text{g}/\text{L}$ (13)

AREA 7			
Sample Type	Sample ID	Depth	PCE
Ambient Air	937IA105	NA	0.79 $\mu\text{g}/\text{m}^3$

AREA 8			
Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA102	NA	1.01 $\mu\text{g}/\text{m}^3$
Subslab Soil Vapor	937VS104	NA	450 $\mu\text{g}/\text{m}^3$ (4) 39,900 $\mu\text{g}/\text{m}^3$ (5)
Soil Gas	937SB114	3.5	530/494 $\mu\text{g}/\text{m}^3$ (12)
Soil	937SB114	2	<0.0053 mg/kg
Groundwater	937WP01	4.2 - 13	<0.5/<0.5 $\mu\text{g}/\text{L}$
	937SB114	3.5 - 8	0.95 $\mu\text{g}/\text{L}$

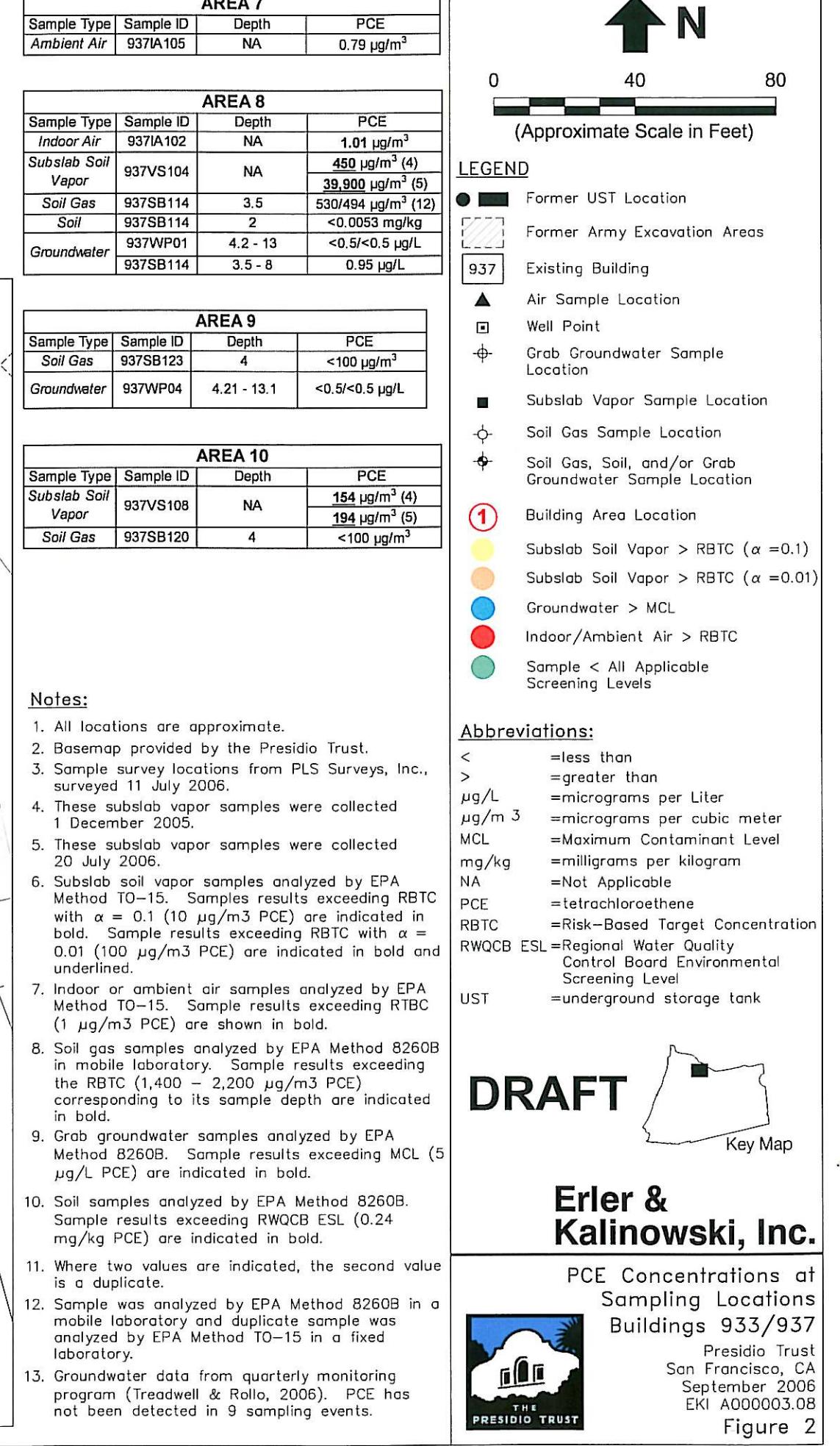
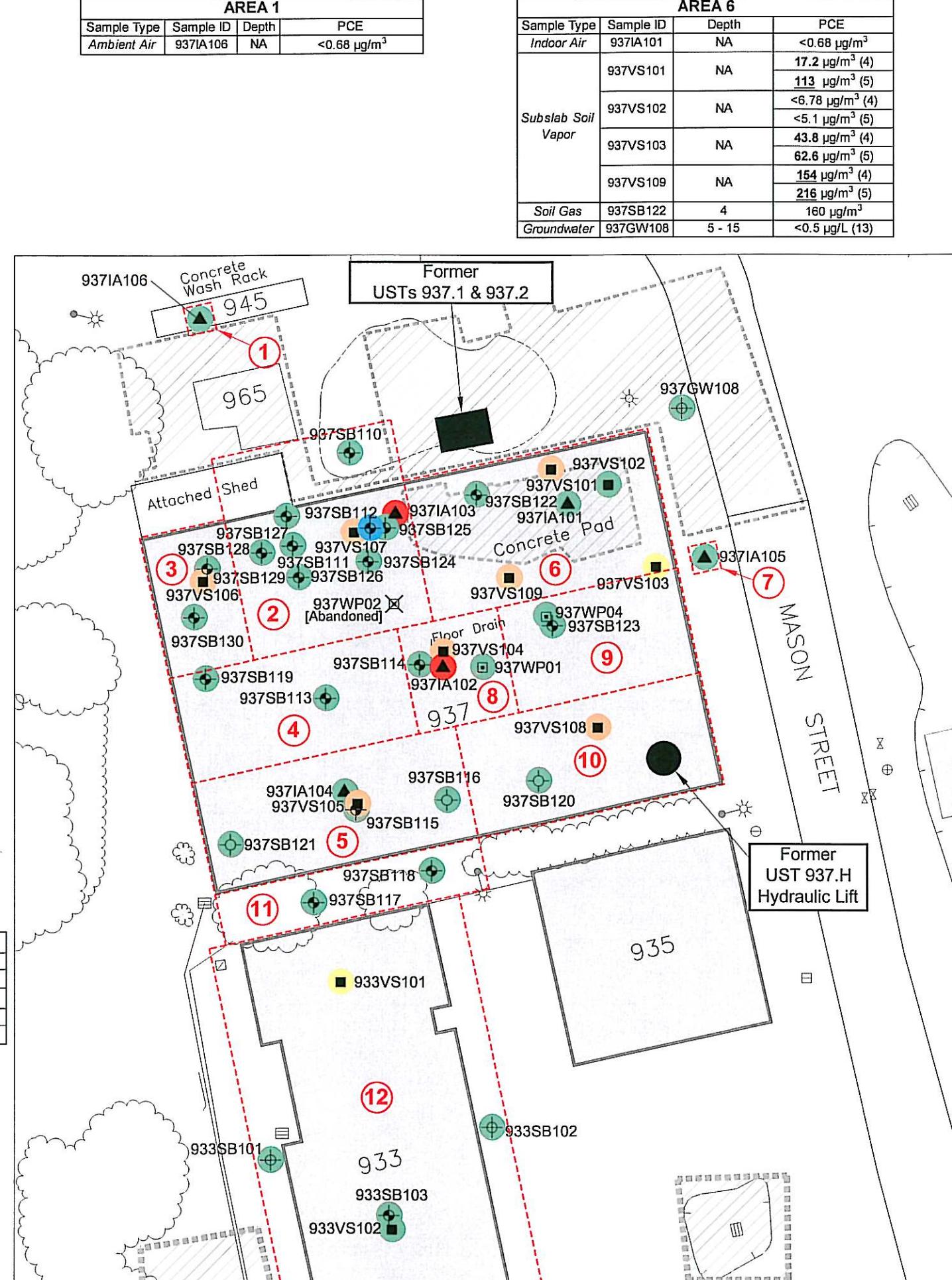
AREA 3			
Sample Type	Sample ID	Depth	PCE
Subslab Soil Vapor	937VS106	NA	474 $\mu\text{g}/\text{m}^3$ (4) 628 $\mu\text{g}/\text{m}^3$ (5)
Soil	937SB129	2.5	<0.0057/<0.0057 mg/kg
	937SB130	2.5	<0.0057 mg/kg
Groundwater	937SB129	4.8 - 9	<0.5/<0.5 $\mu\text{g}/\text{L}$
	937SB130	4.8 - 9	<0.5 $\mu\text{g}/\text{L}$

AREA 4			
Sample Type	Sample ID	Depth	PCE
Soil Gas	937SB113	4	360 $\mu\text{g}/\text{m}^3$
	937SB119	4	600 $\mu\text{g}/\text{m}^3$
Soil	937SB113	3	<0.0063 mg/kg
	937SB119	2.5	<0.0054 mg/kg
Groundwater	937SB113	3.8 - 8	2.5 $\mu\text{g}/\text{L}$
	937SB119	5.3 - 8	0.92 $\mu\text{g}/\text{L}$

AREA 5			
Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA104	NA	<0.68 $\mu\text{g}/\text{m}^3$
Subslab Soil Vapor	937VS105	NA	2,890 $\mu\text{g}/\text{m}^3$ (4) 5,340 $\mu\text{g}/\text{m}^3$ (5)
Soil Gas	937SB115	3.5	490 $\mu\text{g}/\text{m}^3$
	937SB116	3.5	130 $\mu\text{g}/\text{m}^3$
Soil	937SB121	4	<100 $\mu\text{g}/\text{m}^3$
	937SB115	2.5	<0.0061 mg/kg
Groundwater	937SB115	3.8 - 8	0.9 $\mu\text{g}/\text{L}$

AREA 11			
Sample Type	Sample ID	Depth	PCE
Soil Gas	937SB117	3.5	<100 $\mu\text{g}/\text{m}^3$
	937SB118	3.5	<100 $\mu\text{g}/\text{m}^3$
Groundwater	937SB117	4.7 - 6	<0.5 $\mu\text{g}/\text{L}$
	937SB118	3.6 - 4	<0.5 $\mu\text{g}/\text{L}$

AREA 12 (Building 933)			
Sample Type	Sample ID	Depth	PCE
Subslab Soil Vapor	933VS101	NA	40.6/ <6.78 $\mu\text{g}/\text{m}^3$
	933VS102	NA	6.99 $\mu\text{g}/\text{m}^3$
Soil Gas	933SB103	3.5	<100 $\mu\text{g}/\text{m}^3$
Soil	933SB103	3	<0.0058 mg/kg
Groundwater	933SB101	4 - 8	<0.5 $\mu\text{g}/\text{L}$
	933SB102	3.6 - 8	<0.5 $\mu\text{g}/\text{L}$
	933SB103	3.5 - 6	<0.5 $\mu\text{g}/\text{L}$



Attachment 2

Draft Results from the Vapor Intrusion Assessment and Follow-on Sampling at Buildings 937 and 933

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TABLE 1
SAMPLE LABORATORY ANALYSIS MATRIX
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample ID	Laboratory Analyses					
	VOCs in Subslab Vapor (a)	VOCs in Indoor Air (a)	VOCs in Soil Gas (b)	VOCs in Groundwater (b)	VOCs in Soil (b)	Physical Properties
Building 933						
933VS101	●					
933VS102	●					
933SB101				●		
933SB102				●		
933SB103			●	●	● (c)	●
Building 937						
937VS101	●					
937VS102	●					
937VS103	●					
937VS104	●					
937VS105	●					
937VS106	●					
937VS107	●					
937VS108	●					
937VS109	●					
937IA101		●				
937IA102		●				
937IA103		●				
937IA104		●				
937IA105		●				
937IA106		●				
937SB110			●	●	●	
937SB111			●	●	●	
937SB112			●	●	●	●
937SB113			●	●	●	●
937SB114			●	●	●	
937SB115			●	●	●	
937SB116			●			
937SB117			●	●		
937SB118			●	●		
937SB119			●	●	●	
937SB120			●			
937SB121			●			
937SB122			●			
937SB123			●			
937SB124					●	
937SB125					●	
937SB126					●	
937SB127					●	
937SB128					●	
937SB129				●	●	
937SB130				●	●	

September 2006

TABLE 1
SAMPLE LABORATORY ANALYSIS MATRIX
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample ID	Laboratory Analyses					
	VOCs in Subslab Vapor (a)	VOCs in Indoor Air (a)	VOCs in Soil Gas (b)	VOCs in Groundwater (b)	VOCs in Soil (b)	Physical Properties
Building 937 (continued)						
937WP01				•		
937WP04				•		

Notes:

- (a) Samples analyzed by EPA Method TO-15.
- (b) Samples analyzed by EPA 8260B.
- (c) Sample 933SB103 was also analyzed for petroleum hydrocarbons and metals.
- (d) Duplicate samples not listed. See summary tables for duplicate samples.

Abbreviation:

VOCs = volatile organic compounds

TABLE 2
SUMMARY OF SUB-SLAB VAPOR RESULTS FOR VOCs
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

		Analytical Results (µg/m ³) (a)/(b)										
Sample Location	Sample ID	Sample Date	Benzene	Chloromethane	Chloroform	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	1,2,4-Tri methylenebenzene	1,3,5-Tri methylenebenzene	o-Xylene
Building 933												
933VS101	933VS101	6/21/2006	<3.19	2.62	<4.88	4.45	<3.47	40.6	<3.77	<5.46	<5.37	<4.92
933VS102	933VS101DUP	6/21/2006	<3.19	<2.07	<4.88	<4.05	<3.47	<6.78	<3.77	<5.46	<5.37	<4.92
933VS102	933VS102	6/21/2006	<3.19	<2.07	<4.88	<4.05	7.19	6.99	15.1	<5.46	<5.37	<4.92
Building 937												
937VS101	937VS101	12/1/2005	3.87	<2.07	<4.88	<4.05	<3.47	17.2	<3.77	<5.46	8.38	5.7
		7/20/2006	<31.9	<103	<97.7	<202	<174	113	<188	<273	<107	<246
937VS102	937VS102	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	<6.78	<3.77	<5.46	<5.37	<4.92
		7/20/2006	1.63	<5.16	<4.88	<10.1	<8.68	<5.09	<9.42	<13.6	<5.37	<12.3
937VS103	937VS103	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	43.8	3.81	<5.46	<5.37	<4.92
		7/20/2006	2.68	<4.13	<3.91	<8.10	<6.95	62.6	<7.54	<10.9	<4.3	<9.83
937VS104	937VS104	12/1/2005	<6.39	<4.13	<9.77	<8.1	<6.95	450	<7.54	125	<10.7	<9.83
		7/20/2006	<31.9	<103	<97.7	<202	<174	39.900	<188	<273	<107	<246
937VS105	937VS105	12/1/2005	4.5	<10.3	<9.8	<20.2	<17.4	5.340	<18.8	52.3	1.620	<24.6
		7/20/2006	<31.9	<20.7	<48.8	<40.5	<34.7	2.890	<37.7	<54.6	1.190	<49.2
937VS106	937VS106	12/1/2005	<6.39	<4.13	<9.77	<8.1	<6.95	474	<7.54	60.9	<10.7	<9.83
		7/20/2006	<31.9	<103	<97.7	<202	<174	628	<188	<273	<107	<246
937VS107	937VS107	12/1/2005	<63.9	<41.3	<97.7	<81	<69.5	5.790	<75.4	<109	<107	<98.3
		7/20/2006	<6.39	<20.7	<19.5	<40.5	<34.7	5.750	<37.7	<54.6	33.2	96.2
937VS107 DUP	937VS107 DUP	12/1/2005	<63.9	<41.3	<97.7	<81	<69.5	5.970	<75.4	<109	<107	<98.3
		7/20/2006	<6.39	<20.7	<19.5	<40.5	<34.7	7.470	<37.7	<54.6	43.3	175
937VS108	937VS108	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	154	<3.77	19.9	16.3	9.54
		7/20/2006	3.74	<5.16	<4.88	<10.1	<8.68	194	19.1	26	18.8	24.2
937VS109	937VS109	12/1/2005	<3.19	<2.07	12.4	<4.05	<3.47	154	<3.77	<5.46	12	<4.92
		7/20/2006	3.64	<2.07	19.9	<4.05	<3.47	216	9.68	<5.46	18.5	8.31
Sub-slab RBTC $\alpha = 0.1$ (c)(d)		2.2	1,900	11.5	38	63	10	6,300	21,000	31	120	124
Sub-slab RBTC $\alpha = 0.01$ (c)(e)		22	19,000	115	380	630	100	63,000	210,000	310	1,200	1,240

TABLE 2
SUMMARY OF SUB-SLAB VAPOR RESULTS FOR VOCs
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Abbreviations:

α - Sub-slab vapor to indoor air attenuation factor
<0.50 - Compound not detected at or above indicated laboratory reporting limit
 $\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter
DTSC - Department of Toxic Substance Control
EPA - Environmental Protection Agency
RBTC - Risk-Based Target Concentration
TIC - Tentatively Identified Compound
VOCs - Volatile Organic Compounds

Notes:

- Sub-slab vapor samples were analyzed for VOCs using EPA Method TO-15. Only detected compounds are listed.
- The following TICs were detected for subslab vapor samples 937VS101, 937VS108, and 937VS109 collected on 1 December 2005: acetone, 4-methyldecane, n-decane and n-undecane. These TICs are not reported herein.
- DTSC vapor intrusion guidance entitled "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air", dated 7 February 2005, recommends using $\alpha = 0.01$. However, for this project DTSC has requested the use of $\alpha = 0.1$ for screening purposes.
- Detected concentrations exceeding the site-specific RBTC when $\alpha = 0.1$ are shown in **bold**.
- Detected concentrations exceeding the site-specific RBTC when $\alpha = 0.01$ are shown in **bold** and underlined.

SUMMARY OF INDOOR AND AMBIENT AIR RESULTS FOR VOCs

Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Location	Sample Location	Sample ID	Sample Date	Analytical Results ($\mu\text{g}/\text{m}^3$) (a)(b)	
				Benzene	Tetrachloroethene
Building 937					
Indoor	937IA101	937IA101	1/31/2006	1.26	<0.68
	937IA102	937IA102	1/31/2006	2.42	1.01
	937IA103	937IA103	1/31/2006	1.41	0.69
		937IA103 DUP	1/31/2006	1.37	1.06
	937IA104	937IA104	1/31/2006	1.26	<0.68
Outdoor	937IA105	937IA105	1/31/2006	1.39	0.79
	937IA106	937IA106	1/31/2006	1.32	<0.68
RBTC for Air				0.22	1

Abbreviations:

<0.50 - Compound not detected at or above indicated laboratory reporting limit

EPA - Environmental Protection Agency

RBTC - Risk-Based Target Concentration

 $\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

VOCs - Volatile Organic Compounds

Notes:

(a) Air samples were analyzed for benzene, chloroform, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, 1,2,4-trimethylbenzene, xylene (o,-), xylene (m,p-) using EPA Method TO-15. Only detected VOCs are shown.

(b) Air samples that exceed RBTC are shown in bold.

SUMMARY OF SOIL GAS RESULTS FOR VOCs
 Buildings 933 and 937, Presidio of San Francisco
 San Francisco, California

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Analytical Results ($\mu\text{g}/\text{m}^3$) (a)		
				Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene
Building 933						
933SB103	933SB103	6/14/2006	3.5	<100	<100	<100
Building 937						
937SB110	937SB110	6/14/2006	5	230	<100	<100
937SB111	937SB111	6/14/2006	4	1,400	<100	<100
	937SB111 dup	6/14/2006	4	1,300	<100	<100
937SB112	937SB112	6/14/2006	3.5	1,100	<100	<100
	937SB112DUP (b)	6/14/2006	3.5	2,850 (c)	<27.3	<26.9
937SB113	937SB113	6/14/2006	4	360	<100	<100
937SB114	937SB114	6/14/2006	3.5	530	<100	<100
	937SB114 DUP (b)	6/14/2006	3.5	494	64.4	5.7
937SB115	937SB115	6/14/2006	3.5	490	<100	230
937SB116	937SB116	6/14/2006	3.5	130	<100	<100
937SB117	937SB117	6/14/2006	3.5	<100	<100	<100
937SB118	937SB118	6/14/2006	3.5	<100	<100	<100
937SB119	937SB119	6/14/2006	4	600	190	<100
937SB120	937SB120	6/14/2006	4	<100	<100	<100
937SB121	937SB121	6/14/2006	4	<100	<100	160
937SB122	937SB122	6/14/2006	4	160	100	<100
937SB123	937SB123	6/14/2006	4	<100	<100	<100
RBTC at 3.5 ft bgs (d)				1,400	2,700,000	3,900
RBTC at 4 ft bgs (d)				1,700	3,200,000	4,600
RBTC at 4.5 ft bgs (d)				1,900	3,700,000	5,300
RBTC at 5 ft bgs (d)				2,200	4,200,000	6,100
CHHSL (residential) (e)				180	991,000	528
CHHSL (commercial) (e)				603	2,790,000	1,770

Abbreviations:

<0.50 - Compound not detected at or above indicated laboratory reporting limit

EPA - Environmental Protection Agency

ft bgs - Feet below ground surface

RBTC - Risk-based Target Concentration

$\mu\text{g}/\text{m}^3$ - Micrograms per cubic meter

VOCs - Volatile Organic Compounds

Notes:

- (a) Soil gas samples were analyzed for VOCs using EPA Method 8260B.
- (b) Samples 937SB112DUP and 937SB114DUP were analyzed by EPA Method TO-15 in a fixed laboratory.
- (c) Soil gas samples that exceed the RBTC for the given depth are shown in bold.
- (d) The RBTC for soil vapor ($\mu\text{g}/\text{m}^3$) equals the RBTC for indoor air divided by the compound and site-specific attenuation factor, calculated using the Johnson and Ettinger model. All RBTCs are rounded to two significant figures. The RBTC is a function of depth.
- (e) CHHSL = California Human Health Screening Level (California EPA, dated January 2005, Table 1--California Human Health Screening Levels for Soil and Comparison to Other Potential Environmental Concerns).

SUMMARY OF WATER RESULTS FOR VOCs
 Buildings 933 and 937, Presidio of San Francisco
 San Francisco, California

Sample Location	Sample ID	Sample Date	Analytical Results (µg/L)				
			Bromodichloromethane	Chlorobenzene	Chloroform	Tetrachloroethene	Trichloroethene
Building 933							
933SB101	933SB101	6/20/2006	0.7	<0.5	<1	<0.5	0.56
933SB102	933SB102	6/20/2006	<0.5	<0.5	<1	<0.5	<0.5
933SB103	933SB103	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
Building 937							
937SB110	937SB110	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB111	937SB111	6/20/2006	<0.5	0.81	<1	1.6	<0.5
937SB112	937SB112	6/21/2006	<0.5	<0.5	<1	6.3	<0.5
	937SB112 DUP	6/21/2006	<0.5	<0.5	<1	5.9	<0.5
937SB113	937SB113	6/20/2006	<0.5	<0.5	<1	2.5	<0.5
937SB114	937SB114	6/20/2006	<0.5	<0.5	<1	0.95	<0.5
937SB115	937SB115	6/20/2006	<0.5	<0.5	<1	0.9	0.63
937SB117	937SB117	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB118	937SB118	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB119	937SB119	6/20/2006	<0.5	<0.5	<1	0.92	<0.5
937SB129	937SB129	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
	937SB129 DUP	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB130	937SB130	6/21/2006	0.61	<0.5	2.4	<0.5	<0.5
937WP01	937WP01	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
	937WP01 DUP	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
937WP04	937WP04	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
	937WP04 DUP	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
Presidio Drinking Water Cleanup Levels			80	70	80	5	5
Crissy Field Rap Cleanup Level (a)			46	21,000	--	8.25	81
Groundwater RBTCs (b)			6.8	150,000	66	140	330

Abbreviations:

"—" no value listed in California Toxic Rule

<0.50 - Compound not detected at or above indicated laboratory reporting limit

µg/L - Micrograms per liter

RBTCs - Risk-Based Target Concentrations

Notes

(a) Trichloroethene cleanup level was included in the Crissy Field RAP. The cleanup levels for the remaining chemicals were determined from the California Toxics Rule, (Federal Register Vol. 65, No. 97, 18 May 2000), using the same approach used in the Crissy Field RAP.

(b) Groundwater RBTCs were calculated using Johnson and Ettinger model.

TABLE 6
SUMMARY OF SOIL RESULTS FOR VOCs AND PETROLEUM HYDROCARBONS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID (c)	Sample Date	Sample Depth (ft bgs) (c)	Analytical Results (µg/kg)				TPH (b)	
				VOCs (a)	Acetone	Tetrachloroethene	Other VOCs	TPH Diesel	TPH Gasoline
933SB103	933SB103 [2.5]	6/21/2006	3	0.091	<0.0058	ND	12	<0.46	
Building 933									
937SB110	937SB110 [2]	6/21/2006	2.5	<0.068	<0.0068	ND	---	---	
937SB111	937SB111[2]	6/20/2006	2.5	<0.059	<0.0059	ND	---	---	
937SB112	937SB112 [2]	6/21/2006	2.5	<0.052	0.02	ND	---	---	
937SB112 [2] DUP		6/21/2006	2.5	<0.049	0.043	ND	---	---	
937SB113	937SB113[2.5]	6/20/2006	3	<0.063	<0.0063	ND	---	---	
937SB114	937SB114 [1.5]	6/20/2006	2	0.068	<0.0053	ND	---	---	
937SB115	937SB115 [2]	6/20/2006	2.5	<0.061	<0.0061	ND	---	---	
937SB119	937SB119[2]	6/20/2006	2.5	<0.054	<0.0054	ND	---	---	
937SB124	937SB124[3.5]	6/20/2006	4	<0.058	<0.0058	ND	---	---	
937SB125	937SB125[2]	6/20/2006	2.5	<0.053	<0.0053	ND	---	---	
937SB126	937SB126[3]	6/20/2006	3.5	<0.056	<0.0056	ND	---	---	
937SB127	937SB127[2]	6/20/2006	2.5	<0.065	<0.0065	ND	---	---	
937SB128	937SB128[3]	6/20/2006	3.5	<0.054	<0.0054	ND	---	---	
937SB129	937SB129 [2]	6/21/2006	2.5	<0.057	<0.0057	ND	---	---	
937SB130	937SB130 [2]	6/21/2006	2.5	<0.057	<0.0057	ND	---	---	
Presidio Cleanup Level (d)				0.24	0.24	na	700	610	

Abbreviations:

"—" - not analyzed
ft bgs - Feet below ground surface
µg/kg - Micrograms per kilogram
<0.50 - Compound not detected at or above indicated laboratory reporting limit

Notes:

(a) Soil samples were analyzed for VOCs using EPA Method 8260B.
 (b) Soil samples were analyzed for TPH using EPA Method 8015.
 (c) Sample depths for sample IDs were measured from the bottom of the concrete slab. The total sample depth is as measured from the top of the concrete slab, which is approximately one-half of a foot thick.
 (d) Presidio Cleanup Levels for recreational land use. TPH values are based on protection of ecological receptors in a terrestrial environment. No value is identified in the Cleanup Level Document for tetrachloroethene. Therefore, the value from the Water Board Environmental Screening Level is used.

ND - not detected
TPH - Total Petroleum Hydrocarbons
VOCs - Volatile Organic Compounds

TABLE 7
SUMMARY OF SOIL RESULTS FOR METALS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Analytical Results (mg/kg) (a)																
				Antimony	Arsenic	Beryllium	Boron	Cadmium	Chromium, Total	Cobalt	Copper	Lead	Manganese	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
Building 933	933SB103 [2.5]	6/21/2006	3	<0.19	1.7	4.6	<0.19	30	5	3	9.5	<0.053	<0.19	35	<0.47	<0.19	<0.19	15	13	
Presidio Cleanup Levels (b)				5	5.9	500	10	1.7	120	48	120	300	1.6	300	71	1.1	2	1	92	66

Abbreviations:

"—" - Not analyzed

<0.50 - Compound not detected at or above indicated laboratory reporting limit

ft bgs - Feet below ground surface

mg/kg - Milligrams per kilogram

Notes:

(a) Soil samples were analyzed for Title 22 metals using EPA Method 6020.

(b) Presidio Cleanup Levels based on beach dune sand, recreational human land use, buffer zone ecological land use.

TABLE 8
SUMMARY OF PHYSICAL PROPERTIES DATA
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Abbreviations.

Abbreviations

$\%$ Pv - Percent per volume

<0.50 - Compound not detected at or above indicated concentration.

6.33 *Scutellaria* *contorta* var. *cultrata* (L.)

cm^3/cm^3 - cubic centimeter per cubic centimeter.

EPA - Environmental Protection Agency

ft base - Feet below ground surface

It bugs - 1 feet below ground surface

g/cm³ - grams per cubic centimeter

g/g - grams per gram

3.3 $\text{GDP}_{\text{GDP}} = \text{GDP}_{\text{GDP}} \times 10^3$ in
 $\text{m}^3/\text{kg} = \text{Milligrams}$ der kilogram

TOC Total Content

11-12

Notes:

- (a) Moisture, Volumetric Air Content, Density, Porosity, and Total Pore Fluid Saturations analyzed by method API RP40.
- (b) Total Organic Carbon analyzed by Walkley-Black method.
- (c) Total Organic Carbon analyzed by EPA method 7090.

Attachment 3

Conceptual Design Plan for Building 937

